GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 9/5/80

Project Title: The Progress of Knowledge - Survey of Science and Literature

Project No: G-34-607

Project Director: Robert P. Reno

MISC

Sponsor: National Endowment for the Humanities; Washington, D.C. 20506

Agreement Period: From 9/1/80 Until 6/30/31

Type Agreement: Grant No. EP-10024-80-0977 dated 4/4/80

Amount: $25,771 NEH Funds (G-34-607)
6,847 GIT c/s (G-34-317)
$32,618 TOTAL

Reports Required: Final Financial and Performance Reports

Sponsor Contact Person (s):

Technical Matters

Contractual Matters
(thru OCA)

David J. Wallace,
Grant Officer
National Endowment for the Hum.
Washington, D.C. 20506

Defense Priority Rating: None

Assigned to: English (School/Laboratory)

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GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

## SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 4/9/84

Project No. G-34-607 School/~~Lab~~ English

Includes Subproject No.(s) _____

Project Director(s) Robert P. Reno GTRI / ~~GIT~~

Sponsor National Endowment for the Humanities

Title The Progress of Knowledge - Survey of Science and Literature

Effective Completion Date: 6/30/81 (Performance) 6/30/81 (Reports)

~~Grant/Contract~~ Closeout Actions Remaining:

- [X] None
- [ ] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Continues Project No. _____ Continued by Project No. _____

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Form OCA 60:1028

G 34-607 /Reno

FINAL REPORT

National Endowment for the Humanities

Pilot Grant:

Science and Literature: The Progress of Knowledge

Grant Number: EP-10024-80-0977

Grant Directors: Professor Robert P. Reno

Professor Cynthia B. Thomiszer

Georgia Institute of Technology

Department of English

Submitted: September 15, 1981

BACKGROUND:

The overall objective of this project was to develop an interdisciplinary course that explores the basic questions of science and literature by synthesizing the humanist's search for knowledge with that of the scientist. Through a study of scientific, philosophic, and literary texts, the course encourages students to examine assumptions about knowledge that are basic to both scientific and artistic endeavor. The specific objectives of the course are as follows: 1) to increase the student's awareness of how attitudes towards knowledge and science have changed over the centuries; 2) to demonstrate how attitudes towards knowledge and science influence the student's personal values and life assumptions; 3) to help the student examine more closely his own attitudes towards knowledge and science; 4) to expose the student to attitudes towards knowledge and science as expressed in literature from various historical periods.

The academic program at the Georgia Institute of Technology provides the context for this project. Georgia Tech provides rigorous and comprehensive training in engineering, scientific, and technical fields, but offers no major program in any of the humanities. Students are, of course, required to complete 18 credit hours in the humanities, but none of these courses attempts to bridge the gap between the student's major and his humanities requirement. In this context of traditional technological study, an interdisciplinary course in Science and Literature offers the

student the opportunity to pull disparate fields closer together.

The major activities of the grant period can be summarized on a quarterly basis. Fall Quarter, 1980: final preparation to teach pilot course; two-day workshop with Professor E. Fred Carlisle, Chairman of English Department at Michigan State and Consultant to the Project. Winter Quarter, 1981: implementation of pilot course as "English 4081: Science and Literature--The Progress of Knowledge," team taught by Professors Reno and Thomiszer; Professor Roger Hambridge attended all classes in preparation for teaching the course Spring Quarter; meetings with outside evaluators. Spring Quarter, 1981: English 4081 offered a second time; taught by Professor Hambridge; preparation of "Science and Literature" teaching guide; faculty workshops on teaching "Science and Literature." Summer Quarter, 1981: (not part of the grant period); evaluations and review of pilot course; preparation of final report. A detailed description of project activities appears below.

PROJECT ACTIVITIES:

During the grant period, Professors Reno and Thomiszer were involved daily in planning, preparation, implementation, evaluation, and review of the pilot course entitled "Science and Literature: The Progress of Knowledge."

The work schedule during Fall Quarter, 1980 centered on the completion of background reading, the close study of course texts, and the preparation of course materials (description, syllabus,

discussion guides, writing assignments, essay examinations, and so on). Clerical details such as placing book orders, reserving supplemental texts, duplicating magazine and journal articles, and planning for the Consultant's visit to Georgia Tech were also given attention. The workshop seminar conducted by Professor E. Fred Carlisle on December 9 and 10 was well organized and very valuable both for faculty development and specific course plans. (See agenda in Appendix VI.) Each of these activities was scheduled in the original proposal and there were no changes or omissions.

During Winter Quarter, 1981, Professors Reno and Thomiszer taught English 4081. The instructors took care to foster a spirit of free inquiry and curiosity by maintaining open class discussions, by meeting with students individually, and by providing extensive written commentary on all assignments. Through the ten weeks of the term, the outside evaluators (Professors Ronald Lunsford of Clemson University and Amos. St. Germain of Southern Technical Institute) were given periodic reports including a summary of class activities, a synopsis of lecture material, and samples of student responses to written assignments. On March 23, 1981, Reno and Thomiszer travelled to Clemson University for an extended discussion with Professor Lunsford; on March 25, 1981, a similar meeting was held with Professor St. Germain. The reports of the Outside Evaluators are available in Appendix III. All of these activities were described in the original proposal, and there were no omissions. There was one addition, however. Interest in the project among members of

the Tech faculty prompted the Faculty Colloquium to invite Professors Reno and Thomiszer to discuss their work in a two-hour seminar on February 17, 1981.

During Spring Quarter, 1981, "Science and Literature: The Progress of Knowledge," was taught once again, this time by Professor Roger Hambridge under the direction of Professors Reno and Thomiszer. Professor Hambridge made minor modifications in the reading list to suit his individual interests, but the format and focus of the course remained unchanged. Professors Reno and Thomiszer prepared a detailed Teaching Guide for the course and distributed it to the faculty of the English Department. This Teaching Guide is available in Appendix V. Two workshops for interested faculty were conducted on May 21 and May 27, 1981. Finally, a review and evaluation of "Science and Literature: The Progress of Knowledge" was begun. Again, each of these activities is contained in the original proposal and no additions or omissions were made.

Through the activities described above, the original objectives of the project have been fully attained. A strong interdisciplinary course in Science and Literature has been established at Georgia Tech and will continue to be offered periodically as one of the electives available in the English Department. Faculty interest in such a course has been generated, and eight professors have been trained to teach the course in the future. (See STATUS section below for further details.)

IMPACT:

The primary audience for this project consisted of 59 students who were enrolled in the course during Winter and Spring Quarters, 1981. Because the course was an upper-level elective, it contributed three hours of humanities credit to the students' requirements for graduation. Appendix I provides quantitative information on the students who participated in the pilot course.

Evaluations completed at the end of each quarter suggest that students were greatly influenced by the course to reconsider their attitudes towards science and humanities. The surprise that many students expressed over the similarity between the search for knowledge in the sciences and in the humanities is in keeping with the course objectives. Appendices II.A. and II.B. summarize student evaluations of the course.

The second group directly influenced by the project were the three professors involved in teaching the course. During the released time made possible by the grant, Professors Reno and Thomiszer were able to expand and refine their knowledge of Science and Literature through extensive background reading. The seminar conducted by Professor Carlisle was enormously helpful on both a pedagogical and theoretical level. Discussions with the Outside Evaluators also provided helpful insights to course materials and methods of instruction. In addition, the released time allowed the instructors to plan, implement, and evaluate the pilot course much more thoroughly and in far greater detail than would have been possible under the demands of a standard teaching

load (4 courses per quarter).

The faculty of the Georgia Tech English Department constitute the third group to benefit from the project. A total of 17 professors attended one or the other of the Science and Literature workshops. An additional 10 attended the Faculty Colloquium on the course. Many of these professors have continued their study in the field, and the department now has a core of 6-8 professors who are prepared to offer courses in Science and Literature. Moreover, the Consultant and the Outside Evaluators have taken course materials back to their home institutions, thereby influencing at least indirectly the curricula of Michigan State University, Southern Technical Institute, and Clemson University. (Details of the still wider impact of the grant project are presented in the DISSEMINATION section given below.)

In summary, the grant project has had a considerable impact on the English Department of Georgia Tech and on the students who enroll in elective courses offered by that department. The objectives of the course were fully realized, and the project was even more successful than had been anticipated.

The one major oversight of the grant proposal was the failure to secure released time for the professor who taught the course during the Spring Quarter. The purpose of involving a third faculty member was to broaden the base of instructors experienced in teaching Science and Literature; in fact, this concept was part of the proposal from its inception. However, the advisability of providing released time for this professor was entirely overlooked. Professor Roger Hambridge is, therefore, to

be greatly commended, not only for agreeing to teach an experimental course while continuing with regular instructional duties, but also for attending virtually all of the meetings, workshops, and seminars held in connection with the pilot course.

A second problem with the course was mentioned in several of the student evaluations: there was simply too much reading to be covered adequately in ten weeks. After careful consideration, we have determined to remove one of the longer works or two of the shorter works from the reading list next time the course is taught. Apart from the two exceptions listed above, the grant project as completed requires no significant modifications in either planning or implementation.

STATUS:

Because "Science and Literature: The Progress of Knowledge" has served a real student need, has generated interest among the faculty, and has won the respect of the administration, the course will continue to be offered on a regular basis as an elective in the English Department. However, the impact of the course has been far wider than this single addition to the curriculum. Our success with the course has led to another experiment within the department: English 1002, "The Scientist as Writer." This composition course will be taught during Winter Quarter, 1982, and will attempt to integrate the stylistic discoveries we made in teaching "Science and Literature" with the writing problems of our own students. Finally, there is great hope that "Science and

Literature" will become the introductory course for a minor in the humanities. Our existing period courses (Literature in the Age of Darwin, Literature in the Age of Newton, etc.) fit nicely into this scheme without major modifications. "Science and Literature" provides the necessary philosophical background to make these literary courses more profitable for students and faculty alike.

DISSEMINATION:

Apart from the seminars and workshops listed in previous sections, Professors Reno and Thomiszer have worked hard to provide other professors and schools with information about this new course. We will be presenting a paper on the course at the Interface '81 Conference in Humanities and Technology on October 22 and 23, 1981. Several hundred faculty interested in interdisciplinary courses will be attending, and we will have our teaching guides available to them in addition to the presentation we will be making. Also, we have sent a detailed syllabus of the course to Science, Technology, and Society, a newsletter on interdisciplinary courses published at Lehigh University, Bethlehem, PA. Through this newsletter, we hope to reach a geographically wider audience of interested faculty.

# ENCLOSURE 2 ADDENDUM

## Form for Pilot Grantee Reporting of Project Impact Information

Enclosure 2 to the grant award letter provides general instructions for the writing of narrative reports by grantees of the Division of Education Programs. This addendum to Enclosure 2 should be used by recipients of Education Division Pilot Grants to report quantitative aspects of their project's impact.

Although Pilot Grantees should include a project impact section in their narrative reports [in addition to the other standard sections on project background, activities, status, and dissemination], completion of this addendum obviates the need for extensive statistical project impact data in that report. Rather, the narrative impact section should focus on a qualitative assessment of the project's impact on students, faculty, curricula, the institution, etc., and on project strengths and weaknesses.

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Pilot Grant Number: EP-10024-80-0977

Grant Period: From 9/1/80 To 6/30/81

Name & Address of Institution: Georgia Institute of Technology
Atlanta, Georgia 30332

Type of Institution:

- ____ Research University
- __X__ Doctorate-granting University
- ____ Comprehensive University or College
- ____ Liberal Arts College
- ____ Two-year College or Institution

(1) How many students: (a) enrolled in the course(s) developed under the grant? 59 full-time ____ part-time
(b) successfully completed the course(s) developed under the grant?
51 full-time ____ part-time

(2) How many faculty members were directly involved in the course(s) developed under the grant? 3

(3) How many courses were either revised or developed under the grant? 1

(over)

(4) How many of the courses revised or developed under the grant were subsequently incorporated in the curriculum? 1

(5) How many of the courses revised or developed under the grant were the subjects of other grants: (a) From NEH? _____
(b) From other Federal agencies? _____
None (c) From State or local agencies? _____
(d) From private foundations? _____

(6) Do you intend to apply for additional monies from NEH to further develop the course(s) that was revised or developed under this grant?
X Yes _____ No

---

Thank you for taking the time to complete this form. Please include it with the final narrative report you forward to the Endowment.

## APPENDIX I

### Profile of Students Enrolled in English 4081

| | Winter, 1981 | Spring, 1981 |
|---|---|---|
| Total Enrollment: | 28 | 31 |
| **Class Distribution** | | |
| Freshman: | -- | 3 |
| Sophomore: | 5 | 4 |
| Junior: | 5 | 10 |
| Senior: | 18 | 14 |
| **Majors Represented** | | |
| Engineering: | 26 | 26 |
| Management: | -- | 3 |
| Health Systems: | -- | 2 |
| Computer Science: | 1 | -- |
| Physics: | 1 | -- |
| **Grade Distribution** | | |
| A | 5 | 7 |
| B | 12 | 8 |
| C | 3 | 5 |
| D | -- | 1 |
| F | 1 | -- |
| S (Satisfactory) | 3 | 7 |
| Other (incomplete, audit, withdrew) | 4 | 3 |

# APPENDIX II: STUDENT EVALUATIONS

## A. Winter Quarter

### 1. Informal

The table below summarizes student response to the question, "What characteristics of the course did you particularly like or dislike?"

| | Number of Students Who Cited Characteristic |
|---|---|
| **A. Characteristics Liked** | |
| 1. Class discussion | 9 |
| 2. Class lectures | 6 |
| 3. Panel discussions | 5 |
| 4. Intellectual stimulation | 5 |
| 5. Reading selections | 6 |
| 6. Break from technical courses | 2 |
| 7. De-emphasis of grades | 5 |
| 8. Team teaching concept | 4 |
| **B. Characteristics Disliked** | |
| 1. Length of reading list | 4 |
| 2. Panel discussions | 2 |
| 3. De-emphasis of grades | 2 |

The table below summarizes student response to the question, "What elements of the professors' styles of presentation did you particularly like or dislike?"

| | |
|---|---|
| **A. Characteristics liked** | |
| 1. Organization and clarity | 7 |
| 2. Attitudes toward students | 5 |
| 3. Interest and stimulation | 8 |
| 4. Helpfulness and encouragement | 3 |
| **B. Characteristics disliked** | |
| 1. Attempting to cover too much | 3 |
| 2. Failure to involve class | 2 |

The table below presents student reaction to the works on the list of required reading.

| Title | Most Useful | Most Enjoyable | Eliminate |
|---|---|---|---|
| *Advancement of Learning* | 5 | | 13 |
| "The Birthmark" | 2 | 1 | 2 |
| *Doctor Faustus* | 6 | 6 | |
| *Dragons of Eden* | 8 | 6 | |
| *Essay on Man* | 2 | | 1 |
| *Frankenstein* | 5 | 16 | |
| *Genesis*, 2--4 | 1 | | |
| *Hard Times* | | 2 | |
| *In Memoriam* | | | 1 |
| *Oedipus Rex* | 2 | 2 | 1 |
| *The Physicists* | 3 | 7 | 1 |
| *Principles of Human Knowledge* | 1 | | 8 |

# Appendix II: Student Evaluations

## A. Winter Quarter

### 2. Computerized

Appendix II.A.2 presents computerized evaluations of English 4081 (Winter Quarter). These evaluations were compiled as part of Georgia Tech's on-going monitoring of student reaction to instruction and courses.

Interpretative Notes to Accompany Faculty Reports
on Student Reactions to Instruction and Courses

The attached report (one for each class) provides a tabulation and interpretation of student responses to the 46 items included in the "Student Reactions to Instruction and Courses" form. The following information should facilitate your interpretation and use of the data included in the report.

For each item on the questionnaire, the report shows the percent of students in the class who marked each response category, the total number of students who responded, and the average or mean response. The average values may be interpreted relatively by reference to the percentile values shown on the right of the average and labelled "percent below." The values shown indicates for your school, college, and the total Institute the percent of all classes (thus far evaluated) for which the mean value falls below your average. (At the end of Winter Quarter 1981, the number of classes evaluated were 341 for Architecture, 1797 for Engineering, 2188 for Science and Liberal Studies, 370 for MGT, 1263 for STI, and 5959 for the Institute.)

The averages may be interpreted absolutely by noting where the mean falls in reference to the adjectives used to define the five choice points on the rating scales. For example, a mean response of 3 for the rating on overall teaching ability can be interpreted as "good."

The page labelled "Summary Evaluations" presents a summary of ratings of the instructor's ability and the course value.

Ratings of the Instructor

Two overall ratings ("Instructor's Overall Ability" and "Recommended Instructor to Friends") of the Instructor appear near the top of the page labelled "Summary Evaluations." These two ratings are hihgly correlated ( $r = 0.86$) and, consequently, will be similar for most people. Of the total Institute, approximately 13 percent of all evaluated classes have an average rating below 3.0 (good) on overall teaching ability and 36 percent have an average rating of 4.0 (very good) or higher.

The "Instructional Profile" displayed near the center of the page describes your teaching style as seen by students in respect to the frequency with which they perceive you to perform certain types of teaching behaviors. The behaviors are grouped (as shown on the left) according to nine commonly identified teaching dimensions, namely Content Mastery, Stimulation, Clarity, Class Structure, Use of Teaching Aids, Overload, Individual Assistance, Rapport, and Evaluation Procedures, The number of items comprising each dimension and your score on each dimension (obtained by summing your average values for the items grouped under it) are also shown. The results on individual items appear on Page 2.

In the center of the page, the percentiles derived from Institute norms are plotted. By drawing a line from the "x" for dimension 1 to that of dimension 2, on then to dimension 3 and so on, you can construct a visual profile of your teaching procedures as perceived by students relative to their perceptions of the teaching observed in other classes. Those x's that appear to the left of the center indicate dimensions on which your ratings fell below average ratings for Institute.

The value of your scores relative to your school, college, and the Institute appear to the right of the profile. Again, the numbers shown represent the percentage or rated classes whose scores fall below yours.

## Ratings of the Course

The information shown on the bottom half of this page refers to student ratings of your course. These two ratings, "Take Similar Courses" and "What Student Got From Course," are correlated (r=0.73) and, consequently, tend to be similar for most people. Of the total Institute, approximately 14 percent of all rated classes have an average rating below 3.0 (good) on overall course value, and 17 percent have an average rating of 4.0 (very good) or higher.

The nine items shown on the left can be interpreted from an instructional point of view as teaching objectives. From the student point of view, they indicate what the student perceived she or he got from the course.

## Item Response Distributions

This page briefly describes the thirty-three questionnaire items, each relating to some type of instructional activity. The items are grouped according to the teaching dimension with which they are associated. The student's reports of how frequently they perceived you to perform each behavior are shown to the right. Also shown are the number of responses, the average rating and the percentile rank of each item relative to your school, college, and the Institute. The results may be helpful in interpreting any points on the Instructional Profile that seem low or inconsistent with your perception of your teaching style.

On the form given students, most items are stated positively. To break up any response sets, some items on the questionnaire are stated negatively or in reversed fashion. To avoid confusion in interpretation and to provide consistency in reading high scores as representing good teaching, these items (indicated by an asterisk) have been restated positively on the report and the response distributions reversed accordingly. For example, Item 17 on the student questionnaire reads "Instructor was confused by unexpected questions on your summary it has been restated to read: "Not confused by questions." The response distribution also was reversed.

## General Comment

A previous study has indicated that the three teaching dimension scores most highly related to ratings of teaching ability are content mastery, stimulation and teaching aids. The two least related are overload and rapport. The three teaching objectives most closely related to course value are factual knowledge, fundamental principles and development of learning habits. The least related are cultural understanding and communication skills.

Any questions or comments regarding these evaluation procedures may be directed to the Office of the Vice President for Academic Affairs.

GEORGIA INSTITUTE OF TECHNOLOGY

TEACHER EFFECTIVENESS EVALUATION FORM

SUMMARY EVALUATIONS

INSTRUCTOR RENO RP SCHOOL OR COLLEGE ENGL SUBJ AREA ENGL COURSE NO 4001A DATE MAR 91

| RATINGS OF INSTRUCTION | 5 OUTSTAND | 4 V GOOD | 3 GOOD | 2 ADEQUATE | 1 POOR | NUM RESPON | MEAN | PERCENT BELOW SCH | COL | INST |
|---|---|---|---|---|---|---|---|---|---|---|
| INSTRUCTOR'S OVERALL ABILITY | 52.9 | 41.2 | 0.0 | 5.9 | 0.0 | 17 | 4.4 | 89 | 87 | 87 |
| | STRONGLY AGREE | AGREE | UNDECID | DISAGREE | STRONGLY DISAGREE | NUM RESPON | | | | |
| RECOMMEND INSTRUCTOR TO FRIENDS | 58.8 | 29.4 | 5.9 | 0.0 | 5.9 | 17 | 4.4 | 79 | 77 | 76 |

| DIMENSION | NO OF ITEMS | SCORE | INSTRUCTIONAL PROFILE 0 10 20 30 40 50 60 70 80 90 100 | | | |
|---|---|---|---|---|---|---|
| CONTENT MASTERY | 4 | 17.5 | 1 | X | 1 | 42 / 49 / 51 |
| STIMULATION | 4 | 17.1 | 1 | X | 1 | 96 / 97 / 95 |
| CLARITY | 5 | 20.7 | 1 | X | 1 | 45 / 58 / 64 |
| CLASS STRUCTURE | 4 | 17.1 | 1 | X | 1 | 66 / 67 / 69 |
| USE OF TEACHING AIDS | 3 | 12.2 | 1 | X | 1 | 65 / 82 / 78 |
| OVERLOAD | 4 | 15.9 | 1 | X | 1 | 18 / 27 / 37 |
| INDIVIDUAL ASSISTANCE | 3 | 11.9 | 1 | X | 1 | 51 / 64 / 63 |
| RAPPORT | 4 | 17.9 | 1 | X | 1 | 47 / 51 / 55 |
| EVALUATION PROCEDURES | 2 | 8.2 | 1 | X | 1 | 42 / 43 / 49 |
| PERCENT BELOW | | | 0 10 20 30 40 50 60 70 80 90 100 | | | |

| RATINGS OF COURSE | 5 OUTSTAND | 4 V GOOD | 3 GOOD | 2 ADEQUATE | 1 POOR | NUM RESPON | MEAN | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OVERALL COURSE VALUE | 52.9 | 23.5 | 23.5 | 0.0 | 0.0 | 17 | 4.3 | 94 | 97 | 95 |
| | STRONGLY AGREE | AGREE | UNDECID | DISAGREE | STRONGLY DISAGREE | NUM RESPON | | | | |
| TAKE SIMILAR COURSES* | 52.9 | 23.5 | 11.8 | 5.9 | 5.9 | 17 | 4.1 | 90 | 79 | 78 |

| WHAT STUDENT GOT FROM COURSE | GREAT DEAL 5 | 4 | LOT 3 | MODERATE 2 | SOME 1 | LITTLE NUM RESPON | MEAN | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FACTUAL KNOWLEDGE | 18.8 | 25.0 | 31.3 | 18.8 | 6.3 | 16 | 3.3 | 49 | 18 | 10 |
| PRINCIPLES | 29.4 | 29.4 | 35.3 | 0.0 | 5.9 | 17 | 3.8 | 91 | 61 | 48 |
| APPLICATIONS | 0.0 | 23.5 | 35.3 | 23.5 | 17.6 | 17 | 2.6 | 37 | 20 | 9 |
| SELF UNDERSTANDING | 29.4 | 41.2 | 29.4 | 0.0 | 0.0 | 17 | 4.0 | 97 | 98 | 97 |
| PROFESSIONAL ATTITUDE | 17.6 | 23.5 | 52.9 | 5.9 | 0.0 | 17 | 3.5 | 91 | 89 | 80 |
| COMMUNICATION SKILL | 23.5 | 35.3 | 35.3 | 5.9 | 0.0 | 17 | 3.8 | 65 | 83 | 88 |
| IMPLICATION FOR CONDUCT | 17.6 | 52.9 | 17.6 | 11.8 | 0.0 | 17 | 3.8 | 96 | 96 | 96 |
| CULTURAL UNDERSTANDING | 47.1 | 35.3 | 11.8 | 5.9 | 0.0 | 17 | 4.2 | 96 | 91 | 96 |
| LEARNING HABIT | 23.5 | 29.4 | 41.2 | 5.9 | 0.0 | 17 | 3.7 | 95 | 93 | 94 |

*SCALE AND WORDING REVERSED FROM TEST FORM SO AS TO READ POSITIVELY.

Appendix III: Outside Evaluators

A. Professor Amos St. Germain

B. Professor Ronald Lunsford

SOUTHERN TECHNICAL INSTITUTE
Marietta, Georgia 30060

May 4, 1981

The National Endowment for the Humanities

Evaluation

Dear Colleagues:

It is my pleasure to offer you this evaluation of "The Progress of Knowledge: A Survey of Science and Literature," English 4081, an upper level elective taught by Professors Robert P. Reno and Cynthia Thomiszer of the Georgia Institute of Technology. The course was offered for the first time in the Winter Quarter of 1981.

First, let me say something about the excellent cooperation I received from Professors Reno and Thomiszer. I received copies of course syllabi and lists of secondary and recommended readings. I was given copies of the first essays which the students wrote. This was a most interesting exercise. Students wrote essays comparing/contrasting the roles of the artist and the scientist/engineer. At the end of the course Xeroxed copies of these essays were returned to allow the students to determine if any of their views had changed. I received copies of the mid-term and final exams. And while most of the exams were quite thoughtful, no attempt was made by the instructors to only give me the work of the "good" students.

Comments on student work were complete, detailed, thoughtful and meticulous. Every exercise was aimed at articulate, clear thinking. The professors were not merely selling a point of view. Originally there were twenty-eight students in the course. The class included twenty-seven students from the varied branches of engineering and one physics major. Twenty-four students finished the course. The attrition rate was neither high nor unusual.

"The Progress of Knowledge" seems to fill a definite need. Beyond the freshman year the typical Georgia Tech student takes twelve quarter hours in the humanities from a buffet table of courses. Many students take the kinds of English courses typically offered in liberal arts colleges. These courses basically deal with literature but there need not be any informing idea to the student's course of study. "The Progress of Knowledge" would be very beneficial in this situation. There is talk at Georgia Tech of a certificate program which means the student will take a set of courses centered around a theme. The theme for this certificate program would be various aspects of literature, science, engineering and technology, and their interrelationships. "The Progress of Knowledge" could be a fitting beginning or concluding course to this certificate

program. There is support for the certificate program in the English Department and in the upper levels of the Georgia Tech administration.

Before the course started, meetings were held with members of the English faculty to familiarize them with the course. The course is being offered by a single instructor this spring quarter. All this is as Professors Reno and Thomiszer proposed.

Like most courses "The Progress of Knowledge" did not go off perfectly. Each student as part of the final project, was to give a previously written lecture to class as a lecture. There was to be time for questions and discussing but the sutdents sometimes conveniently left no time for questions. Having the course run twice by the summer of 1981 should help to solve such problems.

I have had the pleasure of participating in seven conferences on technology and the humanities and I have done reportorial and bibliographical articles in the field of technology and culture studies and "The Progress of Knowledge" is as good a course as I've seen. The instructors seem first-rate.

The idea of this course hits Georgia Tech at a time of change. Research grants in the humanities are not the rule at Georgia Tech. The chairman of the English Department is stepping down this year. The whole university is studying the role of the humanities in its various curricula. The pivoted remaining question is whether or not the path cut by Reno and Thomiszer will be followed. Will the grant money be seed money in a true sense? How deep is the commitment to their new direction? Will the university support and reward such hard work? These things remain in the future, but "The Progress of Knowledge" gives one reason for hope.

Sincerely,

Amos St. Germain, Ph.D.
Associate Professor of English and History
President, Humanities and Technology Association

ASTG:ac

College of Liberal Arts
DEPARTMENT OF ENGLISH

CLEMSON
UNIVERSITY

May 28, 1981

To Whom It May Concern:

From: Ronald F. Lunsford
Director of Composition and Rhetoric
Clemson University

Re: NEH pilot course in Science And Literature
at Georgia Institute of Technology

I am pleased to have the opportunity of evaluating this NEH pilot course. My impression is that this is a successful project which has benefited the two classes of students initially involved and which will benefit students and teachers who may undertake such a course in the future as a result of this project. More specific reactions will be offered under the following headings: Syllabus, Instructors, General Criticisms.

SYLLABUS

The syllabus reveals a great deal of insight into scientific and literary theory. Far too often students enter technological fields with misconceptions about the nature of scientific inquiry which inhibit their appreciation of not only arts but also sciences. I find that many of my students feel that science is objective and, thus, pure and that the arts are subjective and, thus, tainted. Connections between Marlowe's Faustus and Bacon's Advancement of Learning should go a long way toward giving students that insight which could act as a cornerstone for their education.

As I have indicated, I see the concept of "knowing" as central to science and art and, thus, as a perfect hub for this course. I would like to see that focus even stronger, however. I am well aware in making the following suggestion that there are a limited number of things which can be dealt with in the short time the course lasts, but I would like to see some treatment of the works of Michael Polanyi and/or Jacob Bronowski. Both of these brilliant thinkers deal with the concept of knowing as it spans the gap between science and art. I would also like to see some treatment of Thomas Kuhn and/or Larry Laudan. As it stands, the syllabus may be a bit too heavily given over to the arts. I would like to make sure students understand bona fide scientists to be saying that science and art are similar in many respects.

INSTRUCTORS

I have had the privilege of chatting with all three instructors in the project and am impressed by their commitment to and knowledge of this subject matter. I am especially happy that they desire to share with other faculty members at Georgia Institute of Technology and with faculty at other institutions. I think they have the necessary qualifications to conduct seminars in which they share what they have learned with other teachers who have an interest in such interdisciplinary courses.

The teachers also have the objectivity to criticize their program and to learn from their mistakes. I am sure that the course will be even stronger when they next offer it.

GENERAL CRITICISMS

I would like everything I say in this section to be interpreted as constructive, for, as I have said above, I am very much impressed with this project. After talking with Professors Reno and Thomiszer at Clemson, I did feel, however, that there were a few ways in which the program could be strengthened. When I first heard of the project, my immediate reaction was that it should provide a vehicle for interchanges between researchers in the humanities and researchers in the sciences. My conversation with Professors Reno and Thomiszer did not convince me that much communication of the sort I had envisioned had occurred. Perhaps I am concerned with this problem because I feel a lack of connection between 'liberal arts' people and 'science' people here at Clemson. At any rate, I would offer this as something to think about.

I mentioned above that I think these instructors have the capabilities which will allow them to share their experience in this project with other teachers. As of yet, I do not see a framework which will allow them to do so very effectively. Connected to this criticism is one final one, viz., I do not think the future direction of the program has been established very clearly. What exactly is to happen at Georgia Institute of Technology next year? Will this be a permanent offering? Will there be any move to develop an interdisciplinary program around it? Perhaps I am asking these questions prematurely in that the answers await evaluations of the program. If so, I would urge formulation of a plan of action which would allow Professors Reno, Thomiszer, and Hambridge to build upon the foundation they have laid.

In closing I would offer a few observations. Surely education is susceptible to trends and the move toward interdisciplinary studies may be a trend. It is, however, a trend which we need to follow for a while now to offset the trend toward specialization that we have given ourselves to for the past twenty years--the post sputnik years. As a result of this trend, we in higher

education are presented with a generation of students who tend to compartmentalize and analyze and who, often, want to see their higher education as a process by which they will become more and more proficient in a specialized area. Such students need the integrated approach to learning this Science and Literature course can provide.

## APPENDIX IV: COURSE SYLLABUS

### A. Winter Quarter, 1981

| | |
|---|---|
| Jan. 7 | Introduction to course<br>Stereotypes of scientist and artist |
| Jan. 9 | Genesis, 2-4: Forbidden knowledge |
| Jan. 12 | Sophocles, Oedipus Rex; classical attitudes towards knowledge |
| Jan. 14 | Sophocles, cont.; Assignment 1 due |
| Jan. 16 | Oedipus, Icarus, Prometheus, and Daedalus |
| Jan. 19 | Marlowe, Doctor Faustus |
| Jan. 21 | Marlowe, cont.; Medieval attitudes towards knowledge |
| Jan. 23 | Marlowe, cont.; Renaissance attitudes towards knowledge |
| Jan. 26 | Bacon, Advancement of Learning |
| Jan. 28 | Bacon, cont.; Midterm Exam distributed |
| Jan. 30 | Berkeley, Principles of Human Knowledge |
| Feb. 2 | Leibnitz and Newton (lecture): From empiricism to optimism |
| Feb. 4 | Pope, Essay on Man, Epistle I |
| Feb. 6 | Shelley, Frankenstein |
| Feb. 9 | Shelley, cont.; Romantic attitudes towards knowledge |
| Feb. 11 | Shelley, cont.; supplemental reading assigned (on reserve in the library) |
| Feb. 13 | Darwin and the Victorian Crisis (lecture) |
| Feb. 16 | Tennyson, In Memoriam (selections)<br>Dickens, Hard Times (selections) |
| Feb. 18 | Hawthorne, "The Birthmark" |
| Feb. 20 | Durrenmatt, The Physicists |
| Feb. 23 | Durrenmatt, cont.; Oedipus again |

Feb. 25 Sagan, Dragons of Eden

Feb. 27 Sagan, cont.

APPLICATIONS OF IDEAS AND PRINCIPLES

March 2 Bio-ethics: Panel Discussion

March 4 Bio-ethics: Panel Discussion

March 6 Tech-nethics: Panel Discussion

March 9 Tech-nethics: Panel Discussion

March 11 Overview: Annie Dillard, "Is Art All There Is?"

March 13 Summary and Review

Writing Assignments: Winter Quarter

Assignment 1: In 500 words discuss the relative importance of the work of the scientist and the artist. Simply express and support your own beliefs; there are no "correct" answers.

Assignment 2: Choose one of the following topics:
The idea of forbidden knowledge: from Genesis to Bacon
OR
"Man can only know his truth, never the truth." Discuss in terms of the works read so far this quarter.

Assignment 3: Read one of the books on the supplemental list. Write a lecture on that work that you could present to this class, linking the ideas in your chosen text to the principles outlined in the course.

Assignment 4: Using the background readings assigned by the professors, you and four other students will present a panel discussion on a contemporary issue. Choose your topic from one of the following broad categories: MAN IN HIS OWN IMAGE (cloning, abortion, test-tube babies, amniocentesis, etc.); FORBIDDEN KNOWLEDGE? (eugenics, recombinant DNA, science vs. religion in 1981, etc.); RECAPTURING PARADISE (nuclear power, nuclear armaments, life-sustaining equipment, etc.); WHAT IS PROGRESS? (how do we decide? who decides? SST, Concorde, etc.)

Assignment 5: Re-read the essay you submitted for assignment 1. After 10 weeks of study, would you change anything in this essay? Why or why not?

## APPENDIX IV: COURSE SYLLABUS

### B. Spring Quarter, 1981

WEEK 1:

Introduction to course
Genesis 2-4

WEEK 2:

Sophocles, Oedipus Rex

WEEK 3:

Marlowe, Doctor Faustus

WEEK 4:

Shadwell, The Virtuoso

WEEK 5:

Berkeley, The Principles of Human Knowledge
Johnson, Rasselas

WEEK 6:

Johnson, Rasselas (continued)
Shelley, Frankenstein

WEEK 7:

Shelley, Frankenstein (continued)
Fleming, "Charles Darwin, The Anaesthetic Man"
Tennyson, In Memoriam (selections)

WEEK 8:

Hawthorne, "The Birthmark"
Durrenmatt, The Physicists

WEEK 9:

Durrenmatt, The Physicists (continued)
Sagan, The Dragons of Eden

WEEK 10:

Bronowski, The Identity of Man

Requirements:

1. Regular attendance in class.
2. Completion of all graded and ungraded assignments.
3. Active and informed participation in class discussion.

Grading:

During the course of the quarter you must submit three brief essays from a list of topics to be distributed. Each essay will count approximately 20% of your overall grade. Your final exam will require you to write an essay based on one book from the list of supplemental texts. In addition, the final will ask you to use the knowledge acquired in the course to compose an essay which confronts a problem posed by bio-ethics or tech-nethics. The final exam will count 35% of your grade. The remaining 5% will be alloted on the basis of class participation.

Supplemental Texts:

Barbour, Science and Secularity ,
Berger and Luckmann, The Social Construction of Reality
Darwin, The Voyage of the Beagle
Erasmus, In Praise of Folly
Levine and Thomas, The Scientist vs. The Humanist
Matson, The Broken Image
Muller, The Children of Frankenstein
Nietzsche, The Genealogy of Morals
Pirsig, Zen and the Art of Motorcycle Maintenance
Roszak, Where the Wasteland Ends
Snow, Science and Government; The Two Cultures

## APPENDIX V: TEACHING GUIDE

## SCIENCE AND LITERATURE: THE PROGRESS OF KNOWLEDGE

Introduction: This information is meant to suggest possible areas of inquiry for professors interested in teaching 4081, a course developed at Georgia Tech through a grant from the National Endowment for the Humanities.

Goals of the course:

1. To increase the student's awareness of how attitudes towards knowledge and science have changed over the centuries.

2. To demonstrate how attitudes towards knowledge and science influence the student's personal values and assumptions about life.

3. To help the student examine more closely his own attitudes towards knowledge and science.

4. To expose the student to attitudes towards knowledge and science as expressed in the literature of the ages.

General background reading for the professor:

Ian Barbour, Science and Secularity: The Ethics of Technology

Theodore Roszak, Where the Wasteland Ends

Jacob Bronowski, The Ascent of Man

Thomas Kuhn, The Structure of Scientific Revolutions

Larry Laudan, Progress and Its Problems

Plus books given under specific assignments

### SYLLABUS

WEEK 1: Beginnings
(Background reading: Any good Bible Commentary)

Class 1: Introduction to the course

Class 2: Genesis 2-4

1. What is the origin of knowledge? What did Adam know before the fall? After the fall?

2. Why does man eat of the forbidden tree of knowledge and ignore the unforbidden tree of life?
3. Who is the scientist in the story? Adam? Eve? God? The snake?
4. What does it mean "to know"? Simply to see contrasts? (i.e., to know good, one must know evil?)

Class 3: Genesis 2-4 (cont.)

1. What is forbidden knowledge? Is any knowledge forbidden today? By whom?
2. We note a general yearning for a lost "golden age." How do we use technology to attempt to recapture paradise?
3. Are Adam and Eve "like gods" after the fall? In what sense?
4. Nakedness as a metaphor for self-consciousness: is "knowing" an awareness that you exist and that you are separate?

WEEK 2: Classical Attitudes Towards Knowledge
(Background reading: Any intellectual history of Classical Greece, such as Edith Hamilton, The Greek Way, or C. M. Bowra, The Greek Experience)

Class 1: Sophocles. Oedipus Rex

1. Background: merging of Hebraic and Hellenic culture: our religious tradition and our intellectual tradition.
2. What is a hero? A problem-solver? A man who answers riddles?
3. How does Oedipus know the answer to the sphinx? Rational process? Intuition?
4. Is ignorance innocence? How guilty is Oedipus? Does knowledge make us guilty?
5. Irony: the circularity of man's knowledge

Class 2: Oedipus Rex (cont.)

1. What is Oedipus' attitude towards knowledge? What kind of thinker is Oedipus?
2. What did Oedipus do wrong? Do we ever try to circumvent prophecy?
3. Is the truth worth what it costs Oedipus? What it costs us?
4. Is truth an absolute value? An absolute good?

Class 3: Oedipus Rex (cont.)

1. Both Oedipus Rex and Genesis are religious documents. What attitude towards knowledge do they reveal? Why? What do Adam and Oedipus have in common?
2. Story of Daedalus and Icarus: temptation to reach for the sun vs. recognizing human and technical limitations

3. Prometheus myth: Forbidden knowledge--Adam, Oedipus, and Prometheus.
4. What is the difference between wisdom and knowledge?
5. Do we have to suffer to learn?

WEEK 3: Middle Ages and Renaissance
(Background reading: Any intellectual history of the Middle Ages and Renaissance)

Class 1: Marlowe, Dr. Faustus

1. Background: From Aristotle to Aquinas: belief that all knowledge will ultimately confirm our faith in God; unity of religion, science, philosophy, and art. Breakdown of faith and reason (William of Occam); separation of philosophy from theology; growth of magic.
2. Only magic "stretcheth as far as does the mind of man." What does it mean to want power as limitless as your imagination? Is our attitude towards technology similar to Faustus' toward magic?

Class 2: Dr. Faustus (cont.)

1. Tension between the will to know and the price we must pay to find out: Faustus and Adam; Faustus and Icarus; Faustus and Oedipus.
2. Many faces of Faustus: lover, priest, poet, magician, scientist, clown.
3. What does it mean to "sell you soul"?
4. What is hell? Is hell self-awareness? Is hell knowledge? Ignorance?

Class 3: Dr. Faustus (cont.)

1. Our Renaissance inheritance: individuality. What is the price we pay for knowledge of self? The burden of consciousness and the fragmentation of personality.
2. What knowledge do we obtain from art? From science? (Experience vs. experiment)

WEEK 4: Renaissance (continued)

Class 1: Francis Bacon, The Advancement of Learning
(Background reading: Loren Eisley, Francis Bacon and the Modern Dilemma)

1. Is ignorance bliss?
2. Attacks on learning from theologians, politicians, learned men themselves (still relevant today).
3. Bacon's answers to these attacks.
4. Bacon's arguments for the inherent good of knowledge

Class 2: Bacon (cont.)

1. Bacon's a priori assumptions
2. What is advancement (as in advancement of learning)? Does knowledge progress? Do we know more than Bacon did? Are we wiser than Bacon was?
3. Is true knowledge new knowledge?
4. What is learning? If learning is a study meant to bring us closer to truth, what is truth? (and what is "closer"?) Is truth "out there"?
5. How Bacon's work led to the study of epistemology and a recognition of the circularity of man's ability to know: introduce Descartes and Berkeley.

WEEK 4 (cont.): The Enlightenment

Class 3: Bishop Berkeley, Principles of Human Knowledge

1. Idealism vs. materialism; Dr. Johnson's "I refute it thus."
2. Explain "existence is perception."
3. Is something real if it could be perceived but simply isn't? (E.g., the dark side of the moon.)
4. Can the brain know anything without the senses?

WEEK 5: The Enlightenment (cont.)

Class 1: Berkeley (cont.)

1. What is reality? How do Tech students define reality?
2. What is matter? In what sense does it exist?
3. Religious reasons for Berkeley's arguments
4. Ridicule of Bishop Berkeley

Class 2: Newton and Leibnitz: From Empiricism to Optimism (lecture)

1. Triumph of mathematical model of the universe (basics of Principia)
2. Newtonian world-machine: man and the universe, man and God, man and himself
3. Leibnitz' Great Chain of Being, Plenitude, and "the best of all possible worlds"
4. Inheritance from Newton: truth is absolute, harmonious, and knowable, provable by math and experimentation; "good" is functional; "scientist" is to show what happens, not why.

Class 3: Pope, Essay on Man, Epistle I.

1. Pope's a priori assumptions
2. Pope's attitude towards forbidden knowledge.
3. Poetic expression of philosophical and scientific ideas
4. Form and content: the heroic couplet as the structure of reason

WEEK 6: Romantic Revolt

Class 1: Shelley, Frankenstein
1. Frankenstein as "the modern Prometheus"--parallels with classical myth
2. Are attempts to "mock the stupendous power of the creator" necessarily sinful?
3. Man's urge to tinker with nature: the restoration of paradise

Class 2: Shelley (cont.)
1. Voyages of discovery: are greatness and happiness in conflict?
2. Victor's unnatural creation: is the artificial perverted and the natural good?
3. Man as monster: which is which?

Class 3: Shelley (cont.)
1. Responsibility of the scientist for the results of his work.
2. Frankenstein as social novel: make me happy and I'll be good.
3. Robert Walton: is compassion greater than genius?

WEEK 7: American Response and the Victorian Crisis

Class 1: Hawthorne, "The Birthmark"
1. Mind-knowledge vs. blood-knowledge
2. Preference for idea and the unpardonable sin
3. What did Aylmer (the scientist) do right? What did he do wrong?

Class 2: Donald Fleming, "Charles Darwin, the Anasthetic Man" (lecture)
1. Darwin's model: the "tangled bank" vs. the great chain
2. Subjectivity of Darwin's theories
3. Darwin's impact on science (end of forbidden knowledge), politics (determinism). philosophy (utilitarianism), art, and society (progress).

Class 3: Dickens. Hard Times (selections) and Tennyson, In Memoriam (selections)
1. Doubt transfigured: Religious response in Tennyson
2. Dickens' satiric outrage
3. Literary defense of traditional values

WEEK 8: Post-Einstein, The Twentieth Century

Class 1: Durrenmatt, The Physicists
(Background reading: Mobius strip in any math history)

1. Einstein replaces Newton: scientific recognition of relativity and circularity
2. Solomon as symbol of the scientist.
2. How does Mobius echo Oedipus?
3. Who is responsible for controlling knowledge?
4. Who decides what knowledge is forbidden? How is this limit enforced?

Class 2: Durrenmatt (cont.)

1. "What can be thought will be thought." Implications of this concept.
2. Psalm to Cosmonauts: is mankind lost?
3. Human reason as inadequate to problems of modern life and science

Class 3: Carl Sagan, The Dragons of Eden

1. Scientific optimism
2. Scientific model of the brain: where does our knowledge come from?
3. Where is our knowledge going?

WEEK 9: Twentieth Century (cont.)

Class 1: Sagan (cont.)

1. Sagan's a priori assumptions
2. Does Sagan know how we know what we know? What can science tell us about knowledge?
3. Sagan as propagandist: analysis of style

Class 2: Student Panel on Issues in Bio-ethics

1. Creating in our own image: cloning
2. Test-tube babies
3. Abortion
4. Euthanasia

Class 3: Student Panel on Issues in Bio-ethics

1. Genetic engineering
2. DNA experiments: forbidden knowledge?

WEEK 10: Twentieth Century (cont.)

Class 1: Student Panel on Issues in Tech-nethics
1. Is bigger better? (Detroit, SST)
2. Computers: impact on society and our concept of work

Class 2: Student Panel on Issues in Tech-nethics
1. Recapturing paradise: what technology can and cannot do
2. Who decides what true progress is?

Class 3: Annie Dillard, "Is Art All There Is?"
1. Where do you stand in order to see the world as it really is? Ultimate circularity of our knowledge.
2. Is the universe a machine? Or a thought?
3. Is there ultimately any disparity between art and science? Between the ways of knowing they offer? Between the knowledge they offer?

## List of Suggested Texts for English 4081

A. Literary

Aeschylus, Prometheus Bound
Barth, The End of the Road
Brecht, Galileo
Browne, Religio Medici
Camus, The Plague; The Stranger
Dickens, Hard Times
Donne, Anniversaries
Durrenmatt, The Physicists
Eiseley, The Night Country; The Unexpected Universe
Erasmus, Praise of Folly
Hawthorne, "Rappacinni's Daughter"; "The Birthmark"
Goethe, Faust
Johnson, Rasselas
Mailer, Of a Fire on the Moon
Marlowe, Doctor Faustus
Milton, Paradise Lost (especially Book 8)
More, Utopia
Pirsig, Zen and the Art of Motorcycle Maintenance
Pope, Essay on Man
Pynchon, Gravity's Rainbow
Rochester, Satyr on Reason and Mankind
Rousseau, Emile; Confessions
Sartre, No Exit
Shadwell, The Virtuoso
Shelley, M., Frankenstein
Shelley, P., Prometheus Unbound
Sophocles, Oedipus Rex
Spenser, Mutability Cantos
Swift, Gulliver's Travels (especially Book 3)
Tennyson, In Memoriam

Vonnegut, Cat's Cradle
Wells, The Time Machine
Whitman, "When I Heard the Learn'd Astronomer"

B. Historical/Philosophical

Arnold, Literature and Science
Augustine, City of God; Confessions
Bacon, Advancement of Learning; Essays
Berkeley, Dialogues
Descartes, Meditations
Dillard, "Is Art All There Is?"
Freud, Civilization and Its Discontents
Huxley, T., Science and Culture
Kierkegaard, Fear and Trembling
Montaigne, Apology for Raymond Sebond; Essays
Nietzsche, Genealogy of Morals
Pascal, Pensees
Sprat, History of the Royal Society

C. Science, Society and Technology

Barbour, Ian, Science and Secularity: The Ethics of Technology
Barnett, Lincoln, The Universe and Mr. Einstein
Bronowski, Jacob, The Ascent of Man
Fleming, Donald, "Charles Darwin, The Anaesthetic Man"
Fuller, Buckminster, Operating Manual for Spaceship Earth
Marx, Leo, The Machine in the Garden
Matson, Floyd, The Broken Image
Muller, Herbert, The Children of Frankenstein
Roszak, Theodore, Sources; Where the Wasteland Ends
Sagan, Carl, The Dragons of Eden; Broca's Brain
Snow, C. P., Science and Government; The Two Cultures
Also see texts listed for general reading on page 1

APPENDIX VI

Agenda for Consultant, Prof. E. Fred Carlisle

Tuesday, December 9, 1980

| | |
|---|---|
| 7:10 PM | Arrive Republic Flight 376<br>Met by Professor Reno |
| 8:15 PM | Check in Atlanta Sheraton Hotel<br>590 W. Peachtree |

Wednesday, December 10, 1980

| | |
|---|---|
| 8:45 AM | Pick up at Sheraton by Professor Reno |
| 9--12 noon | Work session: Room 107, Price Gilbert Library |
| 12--2 PM | Lunch: Professors Reno, Thomiszer, Hambridge, and Guests |
| 2--4:30 PM | Work session |
| 7:00 PM | Dinner |

Thursday, December 11, 1980

| | |
|---|---|
| 8:45 PM | Pick up at Sheraton by Professor Reno |
| 9--11:30 AM | Work Session: Room 107, Price Gilbert Library |
| 11:30--1:30 PM | Lunch |
| 1:30--3:00 PM | Work Session |
| 3:30 PM | Leave for airport: Professor Thomiszer |
| 5:35 PM | Depart Delta Flight 1726 |